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78

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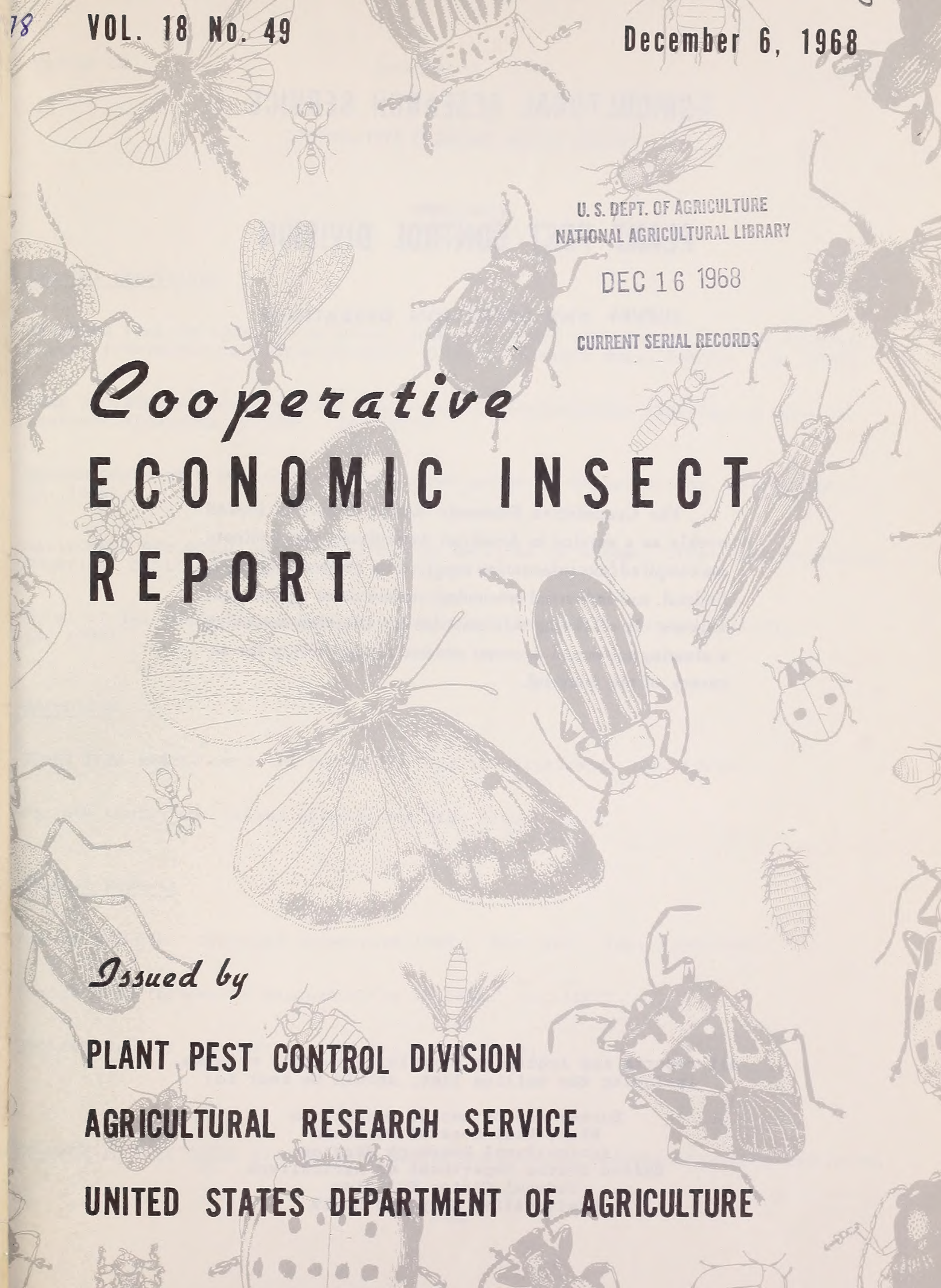

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Federal Center Building
Hyattsville, Maryland 20782

Volume 18 December 6, 1968 Number 49

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG remains economic on wheat in Scotts Bluff and Banner Counties, Nebraska; aerial treatments continued on small grain in western South Dakota. (p. 1095).

CORN ROOTWORM survey indicates most economic infestations expected on corn in southern Minnesota in 1969. (p. 1095).

BERMUDAGRASS MITE adults heavy in Bermuda grass in Orange County, California. (p. 1096).

CALIFORNIA RED SCALE heavy on citrus in sections of Sonoma, Glenn, and Sacramento Counties, California. (p. 1098).

Total of 144 SCREW-WORM cases reported in southwest U.S. November 24-30. (p. 1099).

Detection

TUBER FLEA BEETLE reported for first time in California. (p. 1097).

For new county and island records see page 1102.

Special Reports

Survey Methods. Selected References 1954. Part XIV. (pp. 1103-1106).

Forage Crop Insects in Massachusetts in 1968. (p. 1107).

Distribution of Pea Leaf Weevil (map). (p. 1108).

Reports in this issue are for week ending November 29 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance....................................1095

Insects Affecting

Corn, Sorghum, Sugarcane..........1095
Small Grains......................1095
Turf, Pastures, Rangeland.........1096
Forage Legumes....................1096
Sugarbeets........................1096
Potatoes, Tomatoes, Peppers.......1096
Beans and Peas....................1097
Cole Crops........................1097
Deciduous Fruits and Nuts.......1097
Citrus..........................1098
Small Fruits....................1098
Ornamentals.....................1098
Forest and Shade Trees..........1098
Man and Animals.................1099
Households and Structures.......1099
Stored Products.................1099

Beneficial Insects..1100
Federal and State Plant Protection Programs.................................1100
Hawaii Insect Report..1101
Light Trap Collections..1101
Insect Detection..1102
Corrections...1102
Survey Methods. Selected References 1954. Part XIV..........................1103
Forage Crop Insects in Massachusetts in 1968................................1107
Distribution of Pea Leaf Weevil (map).......................................1108

WEATHER BUREAU'S 30-DAY OUTLOOK

DECEMBER 1968

The Weather Bureau's 30-day outlook calls for temperatures to average below seasonal normals over the southern half of the Nation lying west of the Mississippi, and also over New England. Above normal temperatures are expected for the Ohio Valley and Southeast. In unspecified areas near normal averages are indicated. Precipitation is predicted to exceed normal over a broad area extending from the southern Plateau through the central Plains, Ohio Valley, eastern Great Lakes, and Northeast. Subnormal precipitation is predicted for the West Coast, the northern Plains, and Florida. Elsewhere near normal amounts are in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING DECEMBER 2

HIGHLIGHTS: Winter storms struck the Rocky Mountains and most northern States. A few tornadoes occurred in the South. Temperatures in the Rockies plunged far below zero.

PRECIPITATION: Generous rains fell along the Pacific coast and nearby inland valleys while snow fell above about 4,000 feet in the Cascades and about 6,000 feet in the southern Sierras. Snow is now 36 to 48 inches deep above 3,000 feet in the Cascades. Light snow fell across the northern Great Plains early in the week and moderate to heavy snow fell in the Rocky Mountains on several days during the week and over the weekend. Seven inches of snow fell at El Paso, Texas, Tuesday evening and Wednesday morning. Snow depths reached 2 to 6 inches in the mountains in Arizona and about one foot at Cloudcroft Ranger Station, New Mexico. By the weekend the snow belt had extended from the Rocky Mountains across the northern and central Great Plains to northern New England. Along the southern edge of the snow belt freezing rain mixed with the snow slicked the highways making automobile travel hazardous. Weather of the week continued on page 1102.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - MICHIGAN - Adults still flying at Livingston County blacklight station; 9 moths collected November 24-25. (Janes).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Averaged 20 per linear foot of Coal County oats. (Okla. Coop. Sur.). ARIZONA - Light in most barley fields in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

GREENBUG (Schizaphis graminum) - NEW MEXICO - Generally light, 0-6 per row foot, on wheat at San Jon, Quay County. (Mathews). OKLAHOMA - Ranged up to 150 (average 20) per linear foot in 3 sandy land wheatfields in Cleo Springs area of Major County; damage noted in heaviest infested spots. Counts per row foot ranged 40-50 in Muskogee County field, 6-50 in 3 Washita County fields, 10-40 in Ellis County, and 10-15 in Tillman County. (Okla. Coop. Sur.). MISSOURI - Ranged up to 16 per row foot on early planted wheat in Boone and Callaway Counties. (Munson). NEBRASKA - Remains economic, 10-30 per plant, on wheat in Scotts Bluff and Banner Counties. (Hagen). SOUTH DAKOTA - Aerial treatment on small grain continued during warm weather November 16-22 in western area. (Jones). MARYLAND - Heavy on 30 acres of rye cover crop near Stockton, Worcester County. (U. Md., Ent. Dept.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Averaged 100 per 10 sweeps of Hughes County alfalfa. (Okla. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - SOUTH DAKOTA - Larvae increased markedly on corn in Hamlin and Lake Counties and decreased in Brown County compared with 1967 during fall abundance survey of 10 eastern counties November 18-22. Plant infestations ranged from 4-56 percent in Codington County to 68-100 percent in Hamlin County. Larvae per 100 stalks ranged from 4-98 (average 35) in Miner County to 238-550 (average 327.3) in Hamlin County. (Jones). MINNESOTA - Fall abundance survey conducted in 7 districts in southern two-thirds of State. Larvae per 100 corn plants by district: Southwest 35, south-central 38, southeast 32, west-central 58, central 22, east-central 11, and northwest 99. State average 42. (Minn. Ins. Rpt.).

CORN ROOTWORMS (Diabrotica spp.) - MINNESOTA - D. longicornis and D. virgifera major corn insects in 1968. Adult average per acre by district: Southeast 25,925; southwest 23,728; south-central 13,957; central 13,572; east-central 8,714; west-central 5,377. Counts economic or high generally in southern counties of districts. Generally increased in about half of counties surveyed. D. virgifera percentages lower in 4 of above districts; increased in west-central district; unchanged in east-central district. D. longicornis remains dominant. Problems remain in fields where corn follows corn. Most of economic infestations in 1969 will be in southeast and southwest districts and to lesser extent in south-central and central districts. Problems will be fewer and widely scattered in west-central and east-central districts. (Minn. Ins. Rpt.).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - OKLAHOMA - Present in 50 percent of cornstalks checked in Hughes County and in 33 percent of stalks in Coal County. (Okla. Coop. Sur.).

SMALL GRAINS

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - ALABAMA - Nearly all larvae below ground line dead in rye and other small grain fields after cold temperatures in Houston County. Damaging numbers to small grains in southeast area should be ended. (Roney).

TURF, PASTURES, RANGELAND

A BILLBUG (Sphenophorus venatus vestitus) - CALIFORNIA - Medium in hybrid Bermuda grass in nursery at Bellflower and heavy in tifgreen Bermuda grass in golf course at Pasadena, Los Angeles County. Found on Bermuda grass at Huntington Beach and Fullerton, Orange County, for a new county record. (Cal. Coop. Rpt.).

A MARCH FLY (Dilophus orbatus) - CALIFORNIA - Populations continuing in many locations statewide. Heavy in turf at Oakland, Alameda County, and in lawns of nursery at Concord, Contra Costa County; medium in lawn grass at Modesto, Stanislaus County. (Cal. Coop. Rpt.).

RHODES-GRASS SCALE (Antonina graminis) - CALIFORNIA - Adults medium on Bermuda grass in nursery at San Diego, San Diego County. (Cal. Coop. Rpt.).

BERMUDAGRASS MITE (Aceria neocynodonis) - CALIFORNIA - Adults heavy in Bermuda grass at Irvine, Orange County. (Cal. Coop. Rpt.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - WISCONSIN - Adult collected in alfalfa October 23 near North Leeds, Columbia County, for a new county record. Common in some fields at Kenosha, Kenosha County. (Wis. Ins. Sur.). MISSISSIPPI - No larvae in 4 one-square-foot samples on Oktibbeha County alfalfa. (Dinkins). UTAH - Adults 1-5 per 0.5 pound of juniper duff in Logan Green Canyon, Cache County, 1-2 miles from nearest alfalfa field. (Knowlton, Nov. 26).

A JAPANESE WEEVIL (Calomycterus setarius) - MISSOURI - Collected on red clover in Platte County by L.P. Burgess October 31. This is a new county record. (Munson).

PEA APHID (Acyrthosiphon pisum) - MISSISSIPPI - Light on 10 acres of Oktibbeha County clover; winged and wingless adults observed. (Dinkins). NEW MEXICO - Light on alfalfa in Bernalillo, Chaves, and Dona Ana Counties. (N.M. Coop. Rpt.).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Adults 250 per 100 sweeps in alfalfa on east side of Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

LYGUS BUGS (Lygus spp.) - ARIZONA - Averaged 150 per 100 sweeps in alfalfa on east side of Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

SUGARBEETS

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Larvae averaged 3 per plant in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Moderate in some fields in Salt River Valley, Maricopa County; heavy on ends in many fields. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

SAP BEETLES (Carpophilus spp.) - CALIFORNIA - Larvae and adults of C. mutilatus and C. humeralis medium in tomatoes at Fresno, Fresno County. (Cal. Coop. Rpt.).

BEANS AND PEAS

TUBER FLEA BEETLE (Epitrix tuberis) - CALIFORNIA - Collected on beans at Fort Jones, Siskiyou County, by R.S. Richards and R.P. Allen June 6, 1968. Determined by T.N. Seeno and confirmed by L.G. Gentner. This is a new State record. (Cal. Coop. Rpt.).

COLE CROPS

APHIDS - ALABAMA - Brevicoryne brassicae (cabbage aphid) increase continues on collards and cabbages as cooler weather approaches; noticeable in gardens in Lee and Tallapoosa Counties. Pemphigus populitransversus (poplar petiole gall aphid) continues medium to heavy on turnip roots; noticeable in gardens near Millerville, Clay County. Hyadaphis pseudobrassicae (turnip aphid) light, increasing on turnips in gardens in Lee, Clay, Tallapoosa, Chilton, Autauga, and other counties. (Barwood et al.).

DECIDUOUS FRUITS AND NUTS

MEALY PLUM APHID (Hyalopterus pruni) - CALIFORNIA - Nymphs and adults heavy on plum nursery stock at Cordelia, Solano County, infestation unusually late. (Cal. Coop. Rpt.).

APPLE MAGGOT (Rhagoletis pomonella) - WISCONSIN - Collected on sticky trap in apple tree in September at Shawano, Shawano County. Determined by G. Steyskal. This is a new county record. (PPC).

PECAN WEEVIL (Curculio caryae) - OKLAHOMA - Destroyed 90 percent of pecan crop checked in Mayes County. (Okla. Coop. Sur.).

HICKORY SHUCKWORM (Laspeyresia caryana) - OKLAHOMA - Present in 90 percent of Mayes County pecans. (Okla. Coop. Sur.).

CODLING MOTH (Carpocapsa pomonella) - NEW MEXICO - Collected 2 larvae from pecan shucks in Dona Ana County. (Campbell). This is a new host record. (N.M. Coop. Rpt.).

WALNUT SCALE (Aspidiotus juglansregiae) - CALIFORNIA - Medium to heavy and spotty on walnut trees at Merced, Merced County. Importance increasing in few walnut-growing areas of San Joaquin Valley. (Cal. Coop. Rpt.).

CITRUS

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Increased to epidemic levels at Cloverdale, Sonoma County, during summer. Heavy infestation now covers 15 city blocks and small citrus acreage. Suppression treatment planned this winter and late spring. No previous infestations in area. Favorable weather and few parasites and predators cause of unusual behavior of A. aurantii in widely separated areas of State. Now heavy on navel oranges at Willows, Glenn County, and at Sacramento, Sacramento County; twig mortality heavy. (Cal. Coop. Rpt.).

A KATYDID (Scudderia mexicana) - ARIZONA - Rind feeding injury on mature navel orange fruit noted on trees and at packing facility; injured fruit from east side of Salt River Valley, Maricopa County. Groves apparently not treated in time. Determined by A.B. Gurney. (Ariz. Coop. Sur.).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Injured ripe fruit very little in Salt River Valley, Maricopa County; well-timed prebloom and postbloom sprays used by most growers. (Ariz. Coop. Sur.).

CITRUS FLAT MITE (Brevipalpus lewisi) - CALIFORNIA - Adults heavy on tangelos and other citrus at Bard, Imperial County. (Cal. Coop. Rpt.).

SMALL FRUITS

A TISCHERIID MOTH (Tischeria aenea) - FLORIDA - Larvae moderate on blackberry leaves at Lake Placid, Highlands County, November 6. (Barker). This is a new Florida Department of Plant Industry county record. (Fla. Coop. Sur.).

ORNAMENTALS

A WEEVIL (Nemocestes incomptus) - CALIFORNIA - Adults heavy in rhododendron nursery stock at Fort Bragg, Mendocino County. (Cal. Coop. Rpt.).

A SAP BEETLE (Conotelus mexicanus) - CALIFORNIA - Found in rose at Orosi, Tulare County, for a new county record. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - VIRGINIA - Damage heavy to young loblolly pine throughout Hanover County. Severe on loblolly pine at location in Alleghany County. None at 2 plantations in Rockingham County. (For. Pest Sur., Oct. Rpt.).

ENGRAVER BEETLES (Ips spp.) - VIRGINIA - Killed 20 loblolly pines at Accomack County location and 3-4 trees in each of 3 Caroline County locations. (For. Pest Sur., Oct. Rpt.).

AN EPIPASCHIID MOTH (Tetralopha asperatella) - MARYLAND - Collected by W. Allen and R. Davis from oak near Sudlersville, Queen Annes County, July 11. Determined by C.W. McComb. This is a new county record. (U. Md., Ent. Dept.).

FALL CANKERWORM (Alsophila pometaria) - MICHIGAN - Males abundant at Livingston County blacklight station November 24-25. Females on tree trunks and farm outbuildings during day. (Janes).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - Total of 144 cases reported in U.S. November 24-30 as follows: TEXAS - Atascosa 10, Bandera 1, Bee 4, Bexar 2, Brooks 2, Dimmit 15, Duval 3, Frio 18, Hidalgo 5, Jim Hogg 2, Jim Wells 4, Kenedy 2, Kinney 4, Kleberg 1, La Salle 3, Live Oak 1, Maverick 12, Medina 8, McMullen 1, Pecos 1, Presidio 1, San Patricio 1, Starr 9, Uvalde 3, Val Verde 5, Webb 10, Willacy 1, Zapata 3, Zavala 4; ARIZONA - Maricopa 4, Pinal 1, Yavapai 1; CALIFORNIA - Imperial 1, Riverside 1. Total of 488 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Baja California 4, Territorio sur de Baja California 99, Sonora 122, Chihuahua 84, Coahuila 70, Nuevo Leon 55, Tamaulipas 54. Total of 27 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 76,568,000; Arizona 4,000,000; California 1,900,000; Mexico 83,840,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Ranged up to 9 (average 2) per animal on cattle checked in Payne County. (Okla. Coop. Sur.). ARKANSAS - Activity apparently later and lighter than normal in northwest area. No larvae in 77 head in Washington County and 103 head in Benton County week of November 18. (Simco).

A NOSE BOT FLY (Cephenemyia jellisoni) - OKLAHOMA - Mostly second instars ranged 50-60 per head in deer checked in Cherokee County; some first instars noted. (Okla. Coop. Sur.).

HORN FLY (Haematobia irritans) - MISSISSIPPI - Adults about 3-5 per head on 15 Oktibbeha County cattle. (Dinkins).

HARD-BACKED TICKS - OKLAHOMA - Ixodes scapularis (black-legged tick) 94 percent of population on deer in Cherokee County. Dermacentor albipictus (winter tick) and Amblyomma americanum (lone star tick) light in this county. Apparently lighter than in 1967. (Okla. Coop. Sur.).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - ARKANSAS - Infestations spotty as usual in State. Treatment required week of November 18 on flock in Washington County; absent in most flocks. (Simco).

HOUSEHOLDS AND STRUCTURES

GERMAN COCKROACH (Blattella germanica) - ALABAMA - This and other cockroaches heavy in Lee County store and in late October in Monroe County store; many holes eaten into potatoes on sales counters. Egg capsules at one store averaged about one per square foot on walls and 5-15 per square foot around door and window facings. Nymphs abundant. (Barwood et al.).

STORED PRODUCTS

VETCH BRUCHID (Bruchus brachialis) - WASHINGTON - Destroyed several tons of stored vetch seed during early October in nursery near Bellingham, Skagit County. This is first known infestation for this area in western part of State. Determination verified by M.H. Hatch. (Holland, Eide).

RED FLOUR BEETLE (Tribolium castaneum) - CALIFORNIA - This species, Lasioderma serricorne (cigarette beetle), and Plodia interpunctella (Indian-meal moth) unusually prevalent in households in State. (Cal. Coop. Rpt.).

BENEFICIAL INSECTS

GREEN LACEWINGS (*Chrysopa* spp.) - ARIZONA - Averaged 40 per 100 sweeps of alfalfa in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.). MISSISSIPPI - *C. oculata* adults 5 per 50 sweeps of Oktibbeha County alfalfa. (Dinkins).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CITRUS BLACKFLY (*Aleurocanthus woglumi*) - MEXICO - Biological Control Zone - Inspected 22,268 trees on 359 acres in 4 municipios of Tamaulipas; 647 trees on 15 acres found infested. Chemical Control Zone - Inspected 34,427 trees on 491 acres in 9 municipios in Nuevo Leon and in 6 municipios in Tamaulipas; 373 trees on 393 acres found infested at Linares and Montemorelos, Nuevo Leon. Sprayed aggregate of 39,497 trees at Linares, Hualahuises, and Montemorelos. Inspections negative on 417 trees on 80 properties at Hermosillo and on 19 trees on 10 properties at Tijuana. (PPC Mex. Reg., Oct. Rpt.).

GRASSHOPPERS - MINNESOTA - Lighter in all areas surveyed in 1968; wet weather during and after hatch caused decline. Economic infestations of moderate to abundant expected to be dispersed on alfalfa and along roadsides and ditchbanks throughout west-central, central, and east-central districts in 1969. *Melanoplus femurrubrum* expected to be predominant statewide. *Chorthippus curtipennis* increasing last few years in western area; may be problem in grassy areas and fields. (Minn. Ins. Rpt.).

MEXICAN FRUIT FLY (*Anastrepha ludens*) - MEXICO - Collected 3,228 sterile males and 6,005 sterile females in 350 traps at Tijuana, Baja California; 263 sterile males and 312 sterile females in 150 traps at Ensenada; and 2 sterile flies in 60 traps at Tecate. Caught 10 wild males and 8 wild females in 50 traps at La Paz, Territorio sur de Baja California, and 4 wild males and one wild female in 17 traps at Delegation Villa Constitución. Negative in 291 traps at San Jose del Cabo, in 12 traps at Delegación Todos Santos, and in 12 traps at Pescadero. Released aggregates of 3,596,276 pupae (5 releases) at Tijuana, Baja California; 663,724 pupae (4 releases) at Ensenada; and 2,850,000 pupae (5 releases) at La Paz. Average percent emergence was 81.5 at Tijuana, 78.4 at Ensenada, and 76.4 at La Paz. (PPC Mex. Reg., Oct. Rpt.).

PINK BOLLWORM (*Pectinophora gossypiella*) - NEW MEXICO - Light in most lint cleaners in Roosevelt, Chaves, and Eddy Counties; heavy in gins in southern Eddy County. (Judd). MEXICO - Infestation averaged 27.2 percent during green boll inspections on 14 properties (210 acres) in 3 municipios of northern Chihuahua. Found 2,658 larvae in 1,971 bales during 267 lint cleaner inspections in this area. Captured 14 moths in 64 sex lure traps in Caborca, Pitiquito, and Altar area of Sonora. Collected 10,267 larvae in 1,797 bushels of gin trash and in 237 lint cleaners at Caborca; 20,550 acres in 77 fields infested in Caborca Valley. Collected 36 moths in 30 traps at San Luis R.C., Sonora; infestations averaged 10 percent in 6 monitored fields and in adjacent fields. Captured 88 moths in 77 traps at Mexicali; green boll infestations averaged 18 percent in 14 monitored fields and 22 percent in adjacent fields. (PPC Mex. Reg., Oct. Rpt.).

HAWAII INSECT REPORT

Turf, Pasture, Rangeland - Larvae of a GRASS WEBWORM (Herpetogramma licarsisalis) continue spotty, moderate to heavy in lawns, pastures, parks, and golf courses on Kauai, Maui, Hawaii, and Oahu. Moderate to heavy damage expected to continue remainder of year. Thousands of larvae left severely damaged lawn November 22 on hospital grounds at Honolulu (Wilhelmina Rise), Oahu; larvae up to 175 per square foot on driveway and 200 per square foot at base of walls. (Funasaki et al.).

General Vegetables on Oahu - GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) moderate to heavy on snap beans at Waianae, Waimanalo, Pupukea, Kahaluu, and Kaaawa. CHINESE ROSE BEETLE (Adoretus sinicus) foliar damage light to moderate on snap beans in all areas. Larval mines of LEAF MINER FLIES (Liriomyza spp.) generally light in snap beans and yard-long beans, medium in few plantings, at Waimanalo and Waianae. Adults remain heavy on weeds and bean crops. BEAN FLY (Melanagromyza phaseoli) and CARMINE SPIDER MITE (Tetranychus cinnabarinus) generally light on yard-long beans, snap beans, and soybeans in all areas. GREEN PEACH APHID (Myzus persicae) light to moderate on daikon, mustard cabbage, white-stemmed cabbage, and eggplant at Waimanalo, Pearl City, Koko Head, and Waianae. BEET ARMYWORM (Spodoptera exigua) foliar damage moderate on Chinese peas at Waimanalo. (Wong).

Fruits - Larval damage of a NOCTUID MOTH (Phlegetonia delatrix) moderate to foliage of Java-plum at Hamoa and Keanae and to mountain-apple at Hamoa, Maui. This is a new island record. (Davis, Miyahira).

Forest Insects - Infestations of a SCOLYTID BEETLE (Xyleborus pubescens) in weakened lama tree (Diospyros ferrea) at Halepiula in North Kona on Hawaii Island. This is a new host record. (Davis).

Miscellaneous Insects - A LONGHORN GRASSHOPPER (Euconocephalus nasutus) male caught November 25 in yard at Kaimuki area of Honolulu, Oahu, for second known specimen in State. (Au). Adults of a RHOPALID BUG (Jadera haematoloma) light on balloonvine along roadsides at Koloa and Poipu, Kauai, for a new island record. (Sugawa).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville - 11/23-26, BL - Black cutworm (Agrotis ipsilon) 5, granulate cutworm (Feltia subterranea) 1. MISSISSIPPI - Stoneville - 11/22-29, BL, 38-72°F., precip. 5.66 - Armyworm (Pseudaletia unipuncta) 29, beet armyworm (Spodoptera exigua) 4, black cutworm 105, corn earworm (Heliothis zea) 1, fall armyworm S. frugiperda) 20, granulate cutworm 22, yellow-striped armyworm (Prodenia ornithogalli) 2. TEXAS - Brownsville - 11/23-29, 2BL, 43-84°F., precip. 0.09 - Armyworm 31, black cutworm 36, cabbage looper (Trichoplusia ni) 4, fall armyworm 2, granulate cutworm 4, salt-marsh caterpillar (Estigmene acrea) 1, variegated cutworm (Peridroma saucia) 10. Waco - 11/23-29, BL - Armyworm 48, beet armyworm 31, black cutworm 6, fall armyworm 4, granulate cutworm 63, tobacco budworm (H. virescens) 1, variegated cutworm 19.

INSECT DETECTION

New State Record

TUBER FLEA BEETLE (Epitrix tuberis) - CALIFORNIA - On beans at Fort Jones, Siskiyou County. Collected by R.S. Richards and R.P. Allen June 6, 1968. Determined by T.N. Seeno and confirmed by L.G. Gentner. (p. 1097).

New County and Island Records

A BILLBUG (Sphenophorus venatus vestitus) - CALIFORNIA - Orange County. (p. 1096).

ALFALFA WEEVIL (Hypera postica) - WISCONSIN - Columbia County. (p. 1096).

A JAPANESE WEEVIL (Calomycterus setarius) - MISSOURI - Platte County. (p. 1096).

APPLE MAGGOT (Rhagoletis pomonella) - WISCONSIN - Shawano County. (p. 1097).

A TISCHERIID MOTH (Tischeria aenea) - FLORIDA - Highlands County. (p. 1098).

A SAP BEETLE (Conotelus mexicanus) - CALIFORNIA - Tulare County. (p. 1098).

AN EPIPASCHIID MOTH (Tetralopha asperatella) - MARYLAND - Queen Annes County. (p. 1098).

A NOCTUID MOTH (Phlegetonia delatrix) - HAWAII - Maui Island. (p. 1101).

A RHOPALID BUG (Jadera haematoloma) - HAWAII - Kauai Island. (p. 1101).

CORRECTIONS

CEIR 18(46):1068 - EUROPEAN EARWIG ... Collected ... June 7, 1968, ... should read ... Collected ... June 17, 1968.

Weather of the week continued from page 1094.
Moderate to heavy rains fell from eastern Texas to the Great Lakes -- mostly in the first half of the week. Flash flooding occurred along a few small streams in Tennessee and Mississippi. A few tornadoes occurred Tuesday and Wednesday nights in Texas and Louisiana causing mostly light damage to trees, farm buildings, and utility lines. Precipitation occurred from Thursday to Sunday along the Atlantic coast. Amounts were generally light to moderate.

TEMPERATURE: Above normal temperatures prevailed over most of the West early in the week but a drop in temperatures caused the week to average colder than seasonal. Subzero readings were common in the higher Rockies. Frazer, Colorado, elevation about 8,000 feet, registered 33° below zero on Saturday morning. Temperatures averaged above normal from Washington to New York and southeastward to Florida. The Dakotas and nearby portions of neighboring States averaged 6° to 11° above normal. The East averaged warmer than normal in spite of the cool weekend, when afternoon readings were mostly in the 40's and low 50's. (Summary supplied by Environmental Data Service, ESSA.)

SURVEY METHODS

Selected References 1954*

Part XIV

Additional copies of Parts I through XIV of this bibliography are available from Survey and Detection Operations.

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Division

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Forage Crop Insects in Massachusetts in 1968

F.R. Shaw, S. Dennis, L. Dondero, D. Miller, M. Miller, and C.P.S. Yadava

Population studies of forage crop insects were conducted from April 22 through August 4. Limited collections were conducted subsequently, primarily to determine incidence of alfalfa weevil and of its parasites.

Collections were made at approximately weekly intervals in Hampshire County. Some sampling was also conducted in Berkshire, Bristol, Essex, Franklin, Plymouth, and Worcester Counties. Each collection consisted of 100 sweeps with a 15-inch net. The insects were identified in the laboratory and their numbers tabulated. The following table is based on a collection of 23,149 insects.

Populations of Insects Collected on Forage Crops - 1968

Insect Name or Group	Percent of Total
Pea Aphid (*Acyrthosiphon pisum*)	34.63
Alfalfa Weevil (*Hypera postica*)	32.22
Plant Bugs	11.92
Meadow Spittlebug (*Philaenus spumarius*)	11.48
Leafhoppers	2.33
Lepidoptera	1.05
Grasshoppers	0.91
Sawflies	0.05
Beneficial Arthropods	
Nabis spp.	1.60
Parasitic Hymenoptera	1.00
Spiders	0.97
Coccinellids (lady beetles)	0.72
Chrysopids	0.16
Syrphids	0.16
Pentatomids	0.11

In comparison with the populations observed in 1967, some rather obvious changes occurred. For the first time in several years pea aphid (*Acyrthosiphon pisum*) surpassed alfalfa weevil (*Hypera postica*) in abundance, doubling its 1967 occurrence. Meadow spittlebug (*Philaenus spumarius*) was much more numerous, increasing from 2.7 percent in 1967 to 11.48 percent in 1968. Leafhoppers decreased from 12.7 percent in 1967 to 2.3 percent in 1968. *Nabis* spp., parasitic Hymenoptera, pentatomids, and spiders were more numerous in 1968.

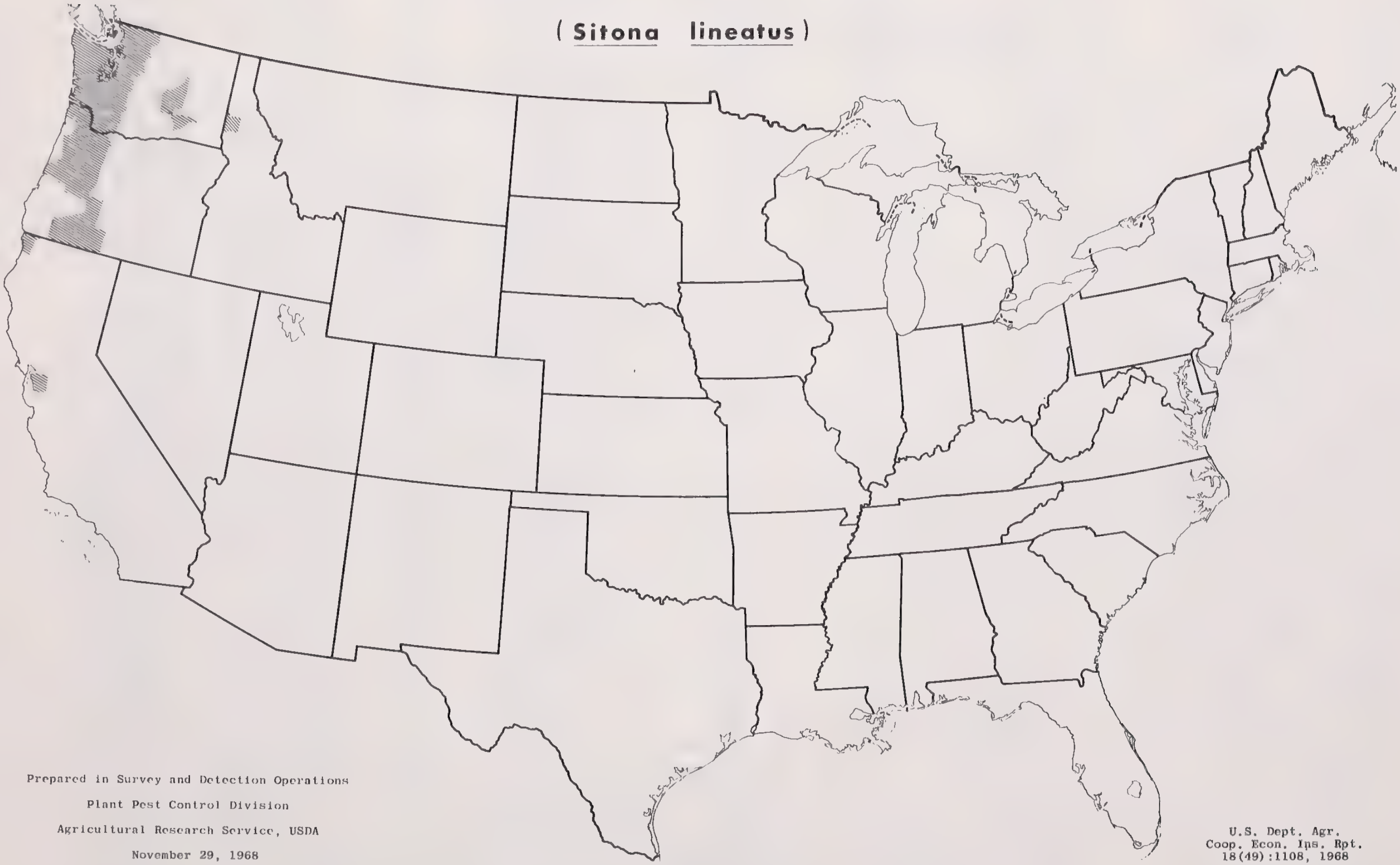
In order to determine the incidences of parasitism, collections were made at approximately weekly intervals from April 22 and were continued until low temperature stopped the activity of alfalfa weevil and its parasites.

The following conclusions relative to parasitism are those of M.C. Miller: "*Bathyplectes curculionis* maintained at least 80 percent parasitism of alfalfa weevil larvae (in fields sampled) from May 8 through July 8 except for the period of peak alfalfa weevil population (May 1-15) when parasitism dropped to 30 percent. *Tetrastichus incertus* maintained a parasitism rate of less than 10 percent from May 23 through July 12. By July 22 parasitism increased to 70 percent."

Observations were made of the preferences of *Nabis rufusculus*, *Podisus maculiventris*, and *P. placidus* for alfalfa weevil larvae and for pea aphid. The nabid preferred pea aphid whereas the pentatomids preferred alfalfa weevil larvae. Some limited observations of the host selection of chrysopid larvae showed these insects selected pea aphids in preference to nymphal leafhoppers and plant bugs and to alfalfa weevil larvae.

Distribution of Pea Leaf Weevil

(*Sitona lineatus*)



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